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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/728,177

12/04/2003

Toshiyuki Nakamura

1217-032351

9453

28289

7590

06/19/2006

THE WEBB LAW FIRM, P.C.
700 KOPPERS BUILDING
436 SEVENTH AVENUE
PITTSBURGH, PA 15219

EXAMINER

ARBES, CARL J

ART UNIT

PAPER NUMBER

3729

DATE MAILED: 06/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/728,177	Applicant(s) NAKAMURA ET AL.	
	Examiner C. J. Arbes	Art Unit 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 3-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>herein</u> | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 3729

Applicants' traversal of the Office's Restriction which was received on or about 21 April 2006 has been carefully reviewed but is not believed to be in error. Group I invention recites a positive step of punching to form the PWB s opposed to the Group II invention which may have used a punched metal sheet but still may received a metal deposition in order to provide the final product. The Examiner classified claim 4 with the Group I invention whereas this claim is dependent from Group II invention. With this caveat the Examiner now will examine only claims 1, 2 and 7-12 taking the position that Claim 4 inadvertently recited a – The process—whereas Applicants intended to recite – A multi-layered PWB—etc. The Restriction as provided in the Office Action which was mailed on or about 27 March 2006 was substantially correct (with the exception as noted herein) and therefore is now **made Final**. Applicants are required to cancel all non-elected claims or take other appropriate action.

An Office Action on the merits of Claims 1, 2 and 7-12 is provided hereinafter.

Claims 1, 2 and 7-12 are rejected under 35 U.S.C. 112, second paragraph, are held to be unclear, vague and indefinite. It is not understood how Applicants can provide a "metal chip" whatever this is construed to be and after a punching step have metal remaining in a die hole. From the ordinary meaning of the terms "punching" and "chip" it would appear that the metal would be completely severed away and therefore would not remain in the so-called die hole in the PWB. Applicants must clarify or define these 2 terms more precisely and indicate why the so called "chip" would not be completely severed from the main conductive metal sheet as the punch progresses into the die hole.

Claims 1, 2 and 7-12, assuming that these claims are clear and definite, are further rejected over Baker et al (Pat No 3,750,278); hereinafter Baker et al in view of Gill et al (Pat No 6,308,406 B1); hereinafter Gill et al or vice versa. Baker et al teach a method of making through connections by press fitting a conductive element (90) into a hole which is punched into a PWB (29). The PWB has a conductive material (86 and 87) on each major side of the circuit board. The hole is punched by means of a punch which is substantially the same size as the through hole and it punches into and through the circuit board. A conductive element is at least as thick as the circuit board through which it is placed. Gill et al teach a method of forming an electrical conductive circuit on a substrate. A conductive layer (28) has a cover layer (40). A conductive circuit (46) is formed by severing the conductive layer. The edge of the conductive layer forms a gap (52). The substrate can be made from polypropylene (Cf. Col 7) Both Baker et al and Gill et al teach that the conductive material connects from one major surface to the opposite major surface. It would have been obvious to combine the two teachings and use the punch and a conductive layer which is at least as thick as the circuit board (which elements are taught by Baker et al to punch the edge of the conductive layer such that the layer is inserted and remains in the through hole. (as seen in Gill) As applied to claim 11 it is held that each the metals recited therein would be within the ordinary skill of a PHOSITA and hence would have been obvious (N.B. Gill et al teach Copper or Aluminum (Cf. Col 7) as the choice for the conductive material)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. J. Arbes whose telephone number is 571-272-4563. The examiner can normally be reached on M, T, R and F from 8 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, P. Vo, can be reached on 571-272-4563. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



C. J. Arbes
Primary Examiner
Art Unit 3729